original functions, retain and store up the accumulated excreta which is discharged only after feeding ceases, when such discharge on the interior of the cell occupied by the larva would not involve contamination of the food.

BUREAU OF ENTOMOLOGY, JAS. A. NELSON
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SPECIAL ARTICLES

CONCERNING THE EFFECT OF INGESTED PLACENTA ON THE GROWTH-PROMOTING PROPERTIES OF HUMAN MILK

IT has been shown that the feeding of desiccated placenta to women during the first eleven days after parturition causes an increase in the protein and lactose per cent. of the milk.[1]

The present report is concerned with the growth of the infants subsisting upon the milk from the above sources. As a basis for comparison there is used the growth of the infants whose nourishment was derived from the women whose milk production was not subjected to the influence of ingested desiccated placenta.

In the tables at the end of this paper the number assigned to the infant corresponds to the number given to the mother in the previous reports.[1] It should be remembered that all the mothers were receiving the same diet and that to the second set 0.6 gm. of desiccated placenta was fed three times a day throughout the period.

Certain definite differences in the progress of growth of the two sets of infants are to be observed.

The variation limit per cent. from day to day, and the absolute per cent. variation from day to day is less in degree and tends to take on more of a positive character in those infants whose mothers were fed the desiccated placenta. Also the per cent. variation from the first day, both as regards its limits and its average is at all times less in degree. The general trend of these latter values is towards zero; this is not to be seen with the infants receiving milk from uninfluenced sources.

[1] Hammett, F. S., and L. G. McNeile, *Jour. Biol. Chem.*, 1917, XXX.; Hammett, F. S., *Jour. Biol. Chem.*, 1917, XXIX., 381.

It is evident that the recovery from the postnatal decline in weight is hastened by the consumption of milk produced under the influence of maternally ingested placenta.

It is obviously possible to eliminate from consideration the increase in protein and sugar production induced by the placental feeding as the cause of the early weight increase.

TABLE I

The Weights during the First Eleven Days after Birth of the Infants receiving Milk from the Mothers whose Production was Uninfluenced by the Ingestion of Desiccated Placenta

Infant No...	1, Oz.	2, Oz.	3, Oz.	4, Oz.	5, Oz.	6, Oz.	7, Oz.	8, Oz.
Day 1.....	118	148	120	120	119	104	96	144
2.....	108	138	116	111	114	98	91	143
3.....	107	130	114	107	112	100	94	131
4.....	109	129	109	110	106	102	94	135
5.....	106	129	112	111	105	104	100	134
6.....	105	132	114	104	106	104	96	134
7.....	108	131	112	104	108	104	98	141
8.....	108	130	108	102	107	107	91	143
9.....	105	129	109	105	108	104	91	149
10.....	108	128	108	112	103	107	93	146
11.....	108	129	108	114	104	107	96	148

TABLE II

The Weights during the First Eleven Days after Birth of the Infants receiving Milk from the Mothers whose Production was Influenced by the Ingestion of Desiccated Placenta

Infant No...	1, Oz.	2, Oz.	3, Oz.	4, Oz.	5, Oz.	6, Oz.	7, Oz.	8, Oz.
Day 1.....	150	119	111	135	144	76	114	123
2.....	138	115	108	123	142	72	112	117
3.....	133	112	101	123	136	71	107	121
4.....	134	112	100	123	136	72	108	122
5.....	140	113	99	124	138	72	110	119
6.....	140	114	100	123	143	72	106	126
7.....	142	115	100	124	146	73	104	126
8.....	145	118	102	124	147	76	106	124
9.....	149	118	101	124	144	76	108	118
10.....	153	116	99	128	144	75	106	126
11.....	150	116	98	130	143	75	108	126

These results may then be best interpreted on the assumption of the presence of some growth-promoting factor in the ingested placenta, which has been passed on to the infants in the milk. There is thus opened up the probability of the placenta taking some part in

intra-uterine growth aside from its function as a transfer system.

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THE EFFECT OF DRAINAGE ON SOIL ACIDITY

For the purpose of studying the effect of drainage on soil acidity, samples of soil were taken in October, 1916, from three of the experiment fields of the Purdue Agricultural Experiment Station. These fields are located near Westport, North Vernon and Worthington. The soils of these fields are all heavy silt loam, very low in organic matter and naturally poorly drained and quite acid in reaction. All of these fields have been thoroughly tile drained from three to five years. A portion of the Westport field is undrained and there are adjacent undrained, untreated areas alongside the North Vernon and the Worthington fields.

TABLE I

RELATIVE ACIDITY OF DRAINED AND UNDRAINED SOILS

Field and Soil Treatment	Lbs. $CaCO_3$ Needed per 2,000,000 Lbs. Soil	
	Drained	Undrained
Westport field:		
Limestone	40 #	760 #
Limestone, phosphate and potash	30 #	360 #
Untreated	860 #	1,280 #
North Vernon field:		
Untreated	1,880 #	2,840 #
Worthington field:		
Untreated	740 #	1,600 #

Table I. shows the acidity of the soil as determined by the potassium nitrate method. Without entering into a discussion of the merits of different soil acidity methods, it may be said that on these soils, which are low in organic matter, there is no great difference in the degree of acidity shown by this method and the lime water and calcium salt methods. These results are consistent enough to indicate that drainage has a material influence on the acidity of soil of this type.

Farmers often refer to wet, poorly drained land as sour. While agricultural writers have placed little or no emphasis on such a correlation, it is quite probable that soils in general will tend to become less acid when thoroughly drained, and vice versa; they will tend to become more acid when water-logged and poorly aerated. In testing soil acidity at different seasons of the year the results often vary quite a little in samples from the same plots of soil. These differences can not be attributed altogether to errors in sampling. The writer believes that at least part of the change of acidity is due to difference in aeration and moisture content of the soil at different seasons. Lipman and Waynick,[1] in an investigation of the effect of climate on soil properties, report that Maryland soil, which shows an acid reaction in its original location, when transported to Kansas or to California becomes neutral or slightly alkaline. It is quite probable that the better drainage and aeration of the soil when placed under less humid conditions could account very largely for the changes in reaction.

Considering SiO_2 an acid-forming oxide, practically all soils except those very high in the basic reacting elements, have a potentially great capacity for developing an acid reaction.

The writer believes that the constitution of the silicates of aluminum has more to do with injurious soil acidity than any other single factor. The acidity of aluminum silicates varies both with the relative proportion of SiO_2 to Al_2O_3 and with the amount of combined water in the silicate.[2] The weathering and changing of soil silicates under poorly drained or well-drained conditions would undoubtedly vary the constitution of the silicates and also vary the degree of soil acidity. It is quite true that certain types of well-drained sandy soils are acid. It is true also that a number of other factors besides drainage conditions affect soil acidity, but it is probable that the most acid soils are formed in poorly drained areas.

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[1] Lipman, C. B., and Waynick, D. D., *Soil Science*, Vol. I., No. 1, p. 5, 1916.

[2] Conner, S. D., "Acid Soils and the Effect of Acid Phosphate and Other Fertilizers upon Them," *Jour. Ind. and Eng. Chem.*, Vol. VII., No. 1, p. 35, 1916.